

Household Refrigeration

A COMPLETE TREATISE ON THE PRINCIPLES, TYPES,
CONSTRUCTION, AND OPERATION OF BOTH ICE
AND MECHANICALLY COOLED DOMESTIC
REFRIGERATORS, AND THE USE OF
ICE AND REFRIGERATION
IN THE HOME

BY
H. B. HULL
REFRIGERATION ENGINEER

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crank case and is controlled by pressure. A brine tank is used which is placed in the ice compartment of the refrigerator.

The mechanical unit is supplied to refrigerate any standard cabinet.

Polaris.—This is a compression type household machine, which was placed on the market about 1921 by the Universe Corporation at Chicago. The refrigerant is sulphur dioxide.

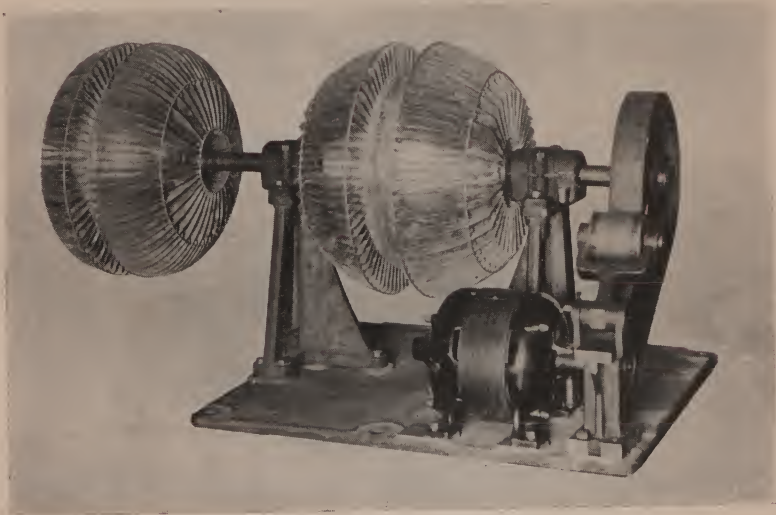


FIG. 27.—AUDIFFREN REFRIGERATING MACHINE.

The machine is installed in the lower part of a white enameled steel cabinet. The compressor is a single-cylinder of the vertical single-acting type.

A belt drive is used from a 1/6-hp. motor. The motor and compressor are mounted on a metal base which contains the air-cooled condenser coils. Forced air cooling is obtained by a fan directly connected to one end of the motor shaft.

The upper part of the cabinet has a single food chamber of $3\frac{1}{2}$ cu. ft. capacity. On one side of the food chamber are located the expansion valve, cooling coils, and two ice making trays.

Circulation is obtained by means of a vertical baffle plate

around the cooling coils and open at the top and bottom. This arrangement eliminates the need of the ice or brine tank compartment.

The thermostatic control consists of a special coil inside the cooling coil unit, which operates the switch by means of metallic bellows in the machine compartment. A copper tube connects the liquid element of the thermostat to this copper bellows.

Audiffren Refrigerating Machine.—Fig. 27 shows the household refrigerating machines manufactured by the Audiffren Machine Co. of New York City. A sectional view of this machine is shown in Fig. 28.

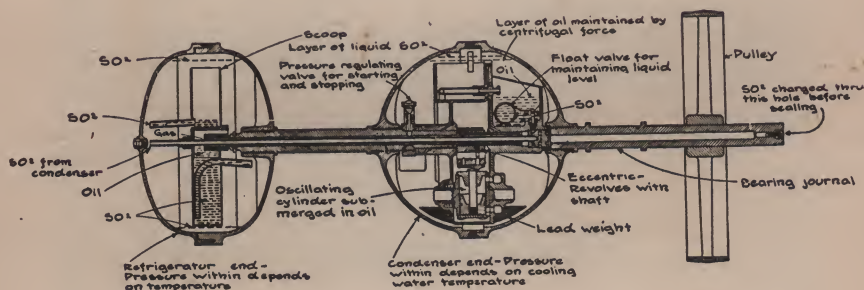


FIG. 28.—SECTION OF AUDIFFREN REFRIGERATING MACHINE.

This machine has an enclosed sulphur dioxide compressor. All of the operating parts are sealed up within this revolving "dumbbell," consisting of two bronze bells on a hollow shaft.

The machine is driven by a $\frac{1}{3}$ -hp. electric motor, the shaft revolving in two babbitt bearings and, as it revolves, one of the bells grows warm, while the other bell grows cold.

The cold air is furnished to the food compartment under pressure. The condenser is air-cooled, thus eliminating the need of water connections.

The complete mechanical unit, including the ice trays, is placed in the lower machine compartment.

Larger machines of this general type have been in commercial use in this country for over 15 years. A typical refrigeration installation is shown by Fig. 29.

Frigidaire Cooling Unit.—Fig. 30 shows the Frigidaire cooling unit, which operates on the flooded system.

The header contains a float valve which controls the supply of liquid refrigerant to the cooling unit.



FIG. 29.—AUDIFFREN MACHINE IN REFRIGERATOR.

A series of parallel copper tubes surround the ice trays. The evaporation of the refrigerant in these tubes takes up heat from the circulating air in the refrigerator, and also takes heat from the water in the ice trays.

This direct cooling unit has replaced the brine tank formerly used with the Frigidaire system.

Frigidaire Air-Cooled Compressor Unit.—Fig. 31 shows the Frigidaire air-cooled compressor unit manufactured by the Delco-Light Co. at Dayton, O.